SOROKIN, O. V.

3061. Sorokin, O. V., On expression of stress relaxation curves for metals by exponential functions (in Russian), Izv. Akad. Nauk SSSR Otd. tekh. Nauk no. 11, 1616–1617, Nov. 1953.

Author investigates two Oding's exponential equations of stress relaxation in metals in an effort to establish a degree to which these equations reflect the relaxation process. Stress $\sigma(t)$ at any instant $t$ is equal to the reduced initial stress $\sigma_t$. The reduction factor is an exponential function, with the base $e$. The exponent is a ratio, with the negative sign, of $t$ and $n(t)$. Author defines the function $n(t)$ as a relaxation time and finds a relationship between $n(t)$ and $t$. Since the relaxation curve is exponential, then the logarithmic derivative of stress, taken with the negative sign, will be equal to the inverse of $n$. This quantity is known as the speed of the relaxation process. If the exponential function does not coincide with the relaxation curve, then the curve representing this function will have one more intersection with the relaxation curve in addition to the initial common point. Hence the entire actual relaxation curve may be represented by a family of exponential functions. Then each point on a curve is defined by an exponential with a particular value of $n(t)$ which reduces the initial stress $\sigma_t$ at instant $t$ to actual value $\sigma(t)$. Author observes that, as a rule, such equations correctly reflect the relaxation process in metals.

V. A. Valey, USA

Sorokin, O. V.

# USSR

539,434

5052. Relation between creep and relaxation of stresses. I. A. ODING, O. V. SOROKIN AND N. D. SAZONOVA. Dokl. Akad. Nauk SSSR, 91, No. 3, 565-8 (1953) In Russian. English translation, U.S. National Sci. Found. NSF-tr-152.

Creep under constant stress, and stress relaxation at constant strain are considered to be two special cases of creep under arbitrary stress variations and attempts to relate curves for the two are made. It is shown that the variations with heat treatment for each is consistent, in certain steels, with this view, and it is concluded that a steel cannot be resistant to creep and not to stress relaxation.    W. M. LOMER.

Sorokin, O. V.

137-1957-12-25416

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 351 (USSR)

AUTHORS:    Sorokin, O. V.,   Tulyakov, G. A.

TITLE:     An Installation for Creep-Testing of Metals Under Combined Stresses (Tension With Torsion) [Ustanovka dlya ispytaniya metallov na polzuchest' pri slozhno-napryazhennom sostoyanii (rastyazheniye s krucheniyem)]

PERIODICAL:  V sb.: Prochnost' metallov. Moscow, 1956, pp 50-54

ABSTRACT:    A critical survey of a series of methods and various equipment for creep-testing of metals under various load conditions. Creep studies of metals exposed to combined stresses under action of tension and torsion, were carried out on a re-designed testing machine of the IP-2 type. Maximal load on the specimen comprised a 3000-kg tension and a 15-kgm torsion. The design of the machine permits the testing of three types of stress conditions: Pure tension, pure torsion, and a combination of tension and torsion. Specimens being tested on the machine are hollow cylinders with diameters of 25 mm and 22 mm and a length of 100 mm. Torque (T) is transmitted to the specimen by means of a disc of constant radius, secured to the upper gripping assembly by means

Card 1/2

137-1957-12-25416

An Installation for Creep-Testing of Metals Under Combined Stresses

of a key.  The turning effort is transmitted to the disc by means
of thin wire cables, which pass over pulleys mounted on the housing
of the machine.  In order to prevent skewing when T is applied,
the lower assembly is equipped with an additional, spherical bearing.
Axial and angular deformations are registered on a specially
designed  extensometer, employing micrometer indicators (two
of which record tension, while the third registers torsion), with
graduations of 0.002 mm each.  In order to prevent torsional forces
from affecting the readings of the tension indicators, and vice versa,
the supporting plates may be regulated by means of adjusting screws.
The modified machine operated quite satisfactorily during long
periods of creep testing at elevated temperatures.

Z.F.

1.  Metals-Creep-Testing equipment   2.  Metals-Creep-Test methods

Card 2/2

SOROKIN, O. V.

Abs Jour   : Referat Zhur - Fizika, No 5, 1957, 12190

Author     : Kaganer, V.E., Regel', A.R., Sorokin, O.V.
Inst       : -
Title      : Effect of Ion Bombardment on the Detecting Properties of
             Semiconductors.

Orig Pub   : Sb. statey Leningr. in-ta tochnoy mekhan. i optiki, 1955,
             vyp. 18, 126-141

Abstract   : An investigation was made of the influence of ion bombard-
             ment (IB) on the voltage-current characteristics of a point
             contact Si, Ge, SiC, PbS, and SbZn with tungsten. The ion
             bombardment was carried out with ions of hydrogen, air,
             oxygen, benzine, tellurium, and manganese, in order to ob-
             tain p-n and p-n-p junctions on the surface of the crys-
             tals. The effect of ion bombardment on the rectifying
             properties of the crystals was established as a function
             of the initial treatment of the semiconductor, of the

Card 1/3

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the bombarded surface of the semiconductor takes place
most strongly, when the bombarding ion is capable of ente-
ring into a chemical bond with the element that forms the
semiconductor or else with its surface layer. The most
noticeable influence of ion bombardment appears with semi-
conductors having the purest composition. By means of
ion bombardment it is possible to produce between surfaces
contact that normally are difficult to produce by other
means. Ion bombardment can improve and worsen the recti-
fying properties of a semiconductor and are not a guaran-
teed universal means of obtaining good detectors, as was
stated by Russel (Russel, S., Bell System Technical Jour-
nal, January 1952). In many cases the ion bombardment in
itself or in combination with other types of surface treat-
ment makes it possible to obtain good detectors. The best

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Abs Jour   : Ref Zhur - Fizika, No 5, 1957, 12190

             detector obtained by means of ion bombardment was with
             n- and p-SiG. Bombardment of n-germanium by ions of air,
             hydrogen, or benzine vapors with subsequent polishing and
             etching for ten minutes in 3% solution of $H_2O_2$, increases
             substantially the rectification coefficient and the inver-
             se voltage (to 100 volts). In all cases, ion bombardment
             of crystals has led to a change in the form of the volta-
             ge-current characteristics, without improving the recti-
             fying properties of the specimens.

SOROKIN, O.V.

SUBJECT       USSR / PHYSICS                          CARD   1 / 2          PA - 1839
AUTHOR        SOROKIN,O.V.
TITLE         On Measuring the Velocity of Surface Recombination in a thin Semi-
              conductor Sample with Qualitatively Different Boundary Surfaces.
PERIODICAL    Zurn.techn.fis, 26, fasc. 11, 2467-2472 (1956)
              Issued:  12 / 1956

At first the continuity equations for the currents of holes and electrons in a
semiconductor are written down in a general form. The present work investigates
the solution of these equations for the concrete case that the following equations
are satisfied: 1.) Stationary distribution of holes and electrons.  2.) Within the
crystal domain investigated no holes or electrons are produced under the effect of
external exciting factors.  3.)  The crystal is assumed to be electrically neutral.
4.) The entire electric current passing through the crystal is assumed to be equal
to zero. The following relations then hold good in the case of any geometric con-
ditions of the sample:
$\vec{I}_p = - qD \nabla \Delta p$, $\vec{I}_n = - qD \nabla \Delta n$ with $D = (n+p)/((n/D_p) + (p/D_n))$. Here $\vec{I}_n$ and $\vec{I}_p$
denote the current density of electrons and holes respectively, q - the absolute
value of the electron charge, n and p - concentration of electrons and holes re-
spectively, $D_n$ and $D_p$ - diffusion coefficients of electrons and holes respectively,
$\tau$ - life of additional current carriers. The aforementioned continuity equations
are then simplified as follows: $\Delta p/\tau = -q^{-1} \text{div} \vec{I}_p$, $\Delta n/\tau = q^{-1} \text{div} I_n$. If the

SOROKIN, O.V.

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| SUBJECT | USSR / PHYSICS | CARD 1 / 2 | PA - 1840 |
| AUTHOR | SOROKIN,O.V. | | |
| TITLE | On Measuring the Life of the Diffusion Coefficient and of the Velocity of the Surface Recombination of Current Carriers not in Equilibrium in a Thin Semiconductor Sample | | |
| PERIODICAL | Zurn.techn.fis, 26, fasc.11, 2473-2479 (1956) Issued: 12 / 1956 | | |

A bundle of light, which produced electrons and holes in the semiconductor, moves above the here investigated plane, thin semiconductor sample with constant velocity. The author investigates the distribution of the current carriers which are not in equilibrium over the volume of the semiconductor sample for the concrete case that the following conditions are satisfied: 1.) The crystal is electrically neutral, 2.) No electric current passes through the crystal. The following continuity equations then hold good in the case of any geometric conditions of the samples: $(\partial/\partial t)\Delta p = D \operatorname{div} \nabla \Delta p - (\Delta p/\tau) + g$, $(\partial/\partial t)\Delta n = D \operatorname{div} \nabla \Delta n - (\Delta n/\tau) + g$. Here it holds that $D = (n+p)/((n/D_p) + (p/D_n))$, and $D_n$ and $D_p$ denote the diffusion coefficient of the electrons and holes respectively, n and p - concentration of electrons and holes respectively, $\Delta n$ and $\Delta p$ - concentration of excess electrons and holes (which are not in equilibrium, $\tau$ - life of current carriers which are not in equilibrium, g - production velocity of electrons and holes in the volume unit under the effect of external exciting factors. $\Delta n$ and $\Delta p$ are considered to be sufficiently small quantities. It is now shown that the same bound-

SOROKIN, O.V.

109-5-20/22

AUTHOR:     SOROKIN,O.V.
TITLE:      Squaring of an Electric potential by means of the Semiconductor Device. (Kvadratirovaniye elektricheskogo napryazheniya pri pomoshchi poluprovodnikovogo ustroystva, Russian)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol 2, Nr 5, pp 664-665 (U.S.S.R.)

ABSTRACT:    Reference is made to the paper by G.YE.PIKUS in Zhurnal Tekhn.Fiz. 1956, Vol 26, pp 22-50. The equation set up there for the modification of the specific electric resistance of a semiconductor sample in the magnetic field has a second term, which is proportional to EH, besides the usual term, which is proportional to $H^2$. Here the formula for the second term is set up for the case in which the field H is directioned parallel to the axis oz while the electric field E is directioned parallel to the axis ox, and it is said that, according to experimental results obtained by the author, the ranges of application for this formula are in reality not so rigid as described in the aforementioned paper by PIKUS. (With 2 Illustrations and 1 Slavic Reference).

ASSOCIATION:  Institute for Semiconductors of the Academy of Science of the U.S.S.R. (Institut poluprovodnikov Akademii nauk SSSR)

PRESENTED BY:
SUBMITTED:    22.11.1956
AVAILABLE:    Library of Congress

Card 1/1

*Sorokin, O.V.*

109-10-9/19

AUTHOR: Sorokin, O.V.

TITLE: Square Law Detection by Means of a Semi-conductor Device (Kvadratichnoye detektirovaniye pri pomoshchi poluprovodnikovogo ustroystva)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, No.10, pp. 1293 - 1294 (USSR).

ABSTRACT: On the basis of the theory derived by G.E. Pikus (Ref.1), it is assumed that the change in the resistance of a semi-conductor plate situated in a magnetic field $H$ (see Fig.1) is expressed by Eq.(1). If a voltage $U = U_0 \cos \omega t$ is applied to the plate in the direction of the axis $x$ (see Fig.1) via an external resistance $R$, the voltage across the plate is in the form:

$$U_r = V_0 + U_\omega \cos \omega t + U_{2\omega} \cos 2\omega t , \qquad (3)$$

where $V_0$ is the DC voltage-component. It is shown that:

$$V_0 = AU_0^2 , \qquad (5)$$

from which it follows that the device can be used as a multi-plier. The validity of Eq.(5) was checked experimentally for

Card1/2

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| SUBJECT | USSR / PHYSICS        CARD  1 / 2        PA - 1992 |
| AUTHOR | ŽUZE,V.P., PIKUS,G.E., SOROKIN,O.V. |
| TITLE | On the Problem of the Influence exercised by an Exterior Electrostatic Field on the Velocity of Surface Recombination in Germanium. |
| PERIODICAL | Žurn.techn.fis, 27, fasc.1, 23-29 (1957) |
| | Issued:  2 / 1957 |

<u>Experimental method and results:</u> The velocity of surface recombination was measured by the methods developed by O.V.SOROKIN, Zurn.techn.fis.26,11 (1956). On this occasion the effective diffusion lengths $L_\alpha$ were experimentally determined, and from the values found in this way the velocities of surface recombination were computed. Investigations were carried out with rectangular plates made of monocrystalline n- and p-germanium. The upper boundary surface of the sample served for the mounting of metal probes: phosphorus bronze for n-germanium and tungsten for p-germanium. On the upper boundary surface of the sample a rectilinear stripe of $\sim 0,005$ cm width, which was vertical to the longitudinal axis of the sample, was illuminated. A mica plate which was coated with silver on one side and had a thickness of from 0,0022 - 0,0030 cm was pressed or pasted on to the lower boundary surface. An electric voltage of up to 6 kV was applied to this silver coating. The block scheme of the measuring device is shown in form of a drawing.
A diagram illustrates the typical curve which is obtained on the screen of the oscillograph by bringing a probe into contact with the sample. When applying an exterior electric field to the sample the curve partly changed its shape,

Sorokin, O.V.

57-6-3/36

AUTHOR    ZHUZE, V.P.,PIKUS, G.Ye.,SOROKIN, O.V.
TITLE     The Determination of the Surface Recombination Rate by Means of a
          Change of Semiconductors Resistance in the Magnetic Field.
          (Metod izmereniya skorosti poverkhnostnoy rekombinatsii po izmen-
          eniyu soprotivleniya poluprovodnika v magnitnom pole -Russain)

PERIODICAL    Zhurnal Tekh .Fiz.,1957,Vol 27, Nr 6, pp 1167-1173 (U.S.S.R.)

ABSTRACT    A new method for the measurement of the velocity of surfade re-
            combination is described. It is based on the dependence of the
            resistance of a semiconductor sample in a magnetic field on the
            recombination velocity on its surfaces. The results of experimen-
            tal chekings of this method are given. They agree well with theo-
            retical predictions; i.e. they fully prove the theoretical final
            conclusions mentioned in the work of one of the authors (G.Ye.
            Pikus, T,1956,Vol 26,pages 22-5o) with regard to the dependence
            of the semiconductor-resistance in the magnetic field on the ve-
            locities of the surface-recombinations,the voltage and the fre-
            quency of the electric field, as well as on the voltage of the
            magnetic field. The method presented can be used for the investi-
            gation of the influence of an exterior electrostatic field and of
            the outer medium on the velocity of surface recombination. At pre-
            sent such experiments are carried out and will be published la-
            ter in various works.
            (1 table, 6 illustrations and 3 Slavic references).

Card 1/1    Inst. Semiconductors, AS USSR

Sorokin, O.V.

57-12-10/19

AUTHOR:     Sorokin, O.V.

TITLE:      A Method of Measuring the Volumetric Lifetime and Diffusion Co-
efficient of Current Carriers by the Change of Resistance of a
Semiconductor in the Magnetic Field
(Metod izmereniya ob"yemnogo vremeni zhizni i koeffitsiyenta
diffuzii nositeley toka po izmeneniyu soprotivleniya
poluprovodnika v magnitnom pole).

ABSTRACT:   Semiconductors possessing  positive and negative current
carriers permit the observation of a special modification
of resistance (reference 1 - 3) in a magnetic field apart
from the ordinary increase of resistance connected with a
decrease of the current carrier mobility and which is
proportional to the square of the potential of the magnetic
field. This effect is caused by a deviation of the carrier
concentration from the equilibrium concentration in the
case of current conduction by the semiconductor placed in
a magnetic field. According to reference 1 the quantity
$\Theta_2 = f(d, D, \mathcal{C}, \mathcal{V})$ on otherwise unchanged conditions is a

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A Method of Measuring the Volumetric Lifetime and Diffusion Co-
efficient of Current Carriers by the Change of Resistance of a
Semiconductor in the Magnetic Field

unique function of the thickness $d$ of the sample, of the
ambipolar diffusion coefficient $D$, of the volumetric
lifetime $\tau$ of the current carriers and of the frequency
of the electric current in the sample. If the frequency—
dependence of the effect obtained experimentally, that is
$V_0 = \varphi(\nu)$ or $\vec{E}_{2\nu} = \varphi(\nu)$, is compared with the theoretical

dependence $\Theta_2 = f(d, D, \tau, \nu)$, $D$ and   can be determined.
$\Theta_2$ denotes a coefficient, which is independent of the external
magnetic field strength and of the electric field strength

in the sample. If $s_1 \gg \dfrac{D}{\lambda_0} \gg s_2$ , $D$ and $\tau$ may in the most
simple way be determined from the measurements of two
samples. On this occasion, the thickness of one sample must
intentionally selected to be greater than $\lambda_0$ and of the

other one to be smaller than this value. ($\lambda_0$ denoting the

Card 2/3     diffusion length in the semiconductor under investigation).

SOROKIN, O, V.

103-2-7/9

AUTHORS:      Pikus, G. Ye. ,   Sorokin, O. V. (Leningrad)

TITLE:        A Non-Linear Semi-Conductor Resistance Sensitive to Magnetic
              Fields (Nelineynoye poluprovodnikovoye soprotivleniye,
              chuvstvitel'noye k magnitnomu polyu)

PERIODICAL:   Avtomatika i Telemekhanika, 1958, Vol. 19, Nr 2, pp. 187-188
              (USSR)

ABSTRACT:     This is a letter to the editor. With reference to References
              1 - 6 the formula (1) is put down and the characteristics of
              a linear germanium resistance with electron-conduction is in-
              vestigated. At room temperature the equation (2) is then ob-
              tained  ...  $\Delta r = 0{,}083 \times 10^{-3} r_o U H$, where  $\Delta r$ denotes the

              complete variation of the electric resistance with the sample
              on different conditions (according to References 1 - 6).
              $r_o$ denotes the resistance of the sample when there is no elec-
              tric field present. Both are expressed in Ohms. U denotes the
              electric voltage at the sample in Volts. H denotes the
Card 1/2      strength of the magnetic field in Oersted. When the sample

A Non-Linear Semi-Conductor Resistance Sensitive to Magnetic Fields    103-2-7/9

is located within the field of a constant magnet with H =1200 the total resistance $r = r_o(1 + 0,1\ U)$. An useful property of these non-linear resistances is the fact that the sign of the change of resistance, as it is to be seen from these formulae, depends on the direction of the electric- as well as of the magnetic field. The degree of non-linearity of the resistance can be increased if in place of a constant magnet an electromagnet is used which is fed from the same sources from which the resistances themselves are fed. In this case also the dependence of $\Delta r$ on H is made use of. The magnetic field strength is changed and thus the magnitude of the change of resistance can be independently influenced. There are 6 references, 6 of which are Slavic.

SUBMITTED:    May 14, 1957

AVAILABLE:    Library of Congress

1. Electrons-Conduction-Mathematical analysis

Card 2/2

SOROKIN, O. V., Candidate Phys-Math Sci (diss) -- "The magnetic-concentration effect and its use for investigating the surface properties of a semiconductor". Leningrad, 1959.  15 pp (Leningrad Order of Lenin State U im A. A. Zhdanov), 200 copies (KL, No 24, 1959, 127)

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~~24(3), 24(6)~~

67395
SOV/181-1-9-17/31

AUTHORS: Zhuze, V. P., Pikus, G. Ye., Sorokin, O. V.

TITLE: Application of the Magnetostriction Effect to the Investigation of the Surface of Semiconductors

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1420 - 1430 (USSR)

ABSTRACT: The authors used the method of surface recombination rate measurement by means of the resistance change of a semi-conductor in the magnetic field to investigate the energy surface structure of germanium. This investigation is reported here in all details. The method applied to measure the surface recombination rate is new and was introduced by the authors themselves. A description thereof is given in references 4 and 5. The aim of the investigation under review was that of demonstrating the application of this method, with two samples of n- and p-germanium being used for the purpose. Figure 1 shows the block diagram of the used setup. The method is based on the application of a formula describing the relation between the resistance change $\Delta\varrho_H$ of a thin plane sample in the magnetic field H and the recombination rates $s_1$

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SOV/181-1-9.-17/31

Application of the Magnetostriction Effect to the
Investigation of the Surface of Semiconductors

and $s_2$ on their opposite faces: $\Delta \varrho_H/\varrho_0 = 2A\mathcal{E}_\nu H \dfrac{s_1-s_2}{s_1+s_2+\alpha/\tau}$ ,

where d is the sample thickness, $\mathcal{E}_\nu$ the voltage of the main
frequency $\nu$, which is incident upon the investigated part of
the sample, $\varrho_0$ is the resistivity without magnetic field. A is
given by $A = \dfrac{a_n}{4} \dfrac{e\mu_n}{ckT} \dfrac{(1+b)(1+\gamma b)pn}{(n+p)(n+pb)} \dfrac{d}{1}$ , where n and p denote the
equilibrium concentrations of electrons and holes, $\mu_n$ and $\mu_p$
their drift mobility, $a_n\mu_n$ and $a_p\mu_p$ their Hall mobility, and
l the length of the investigated part of the sample. It is
now described how it is possible, by means of the instrument,
to obtain direct oscillograms reproducing the dependence of

the quantity $\dfrac{s_1-s_2}{s_1+s_2+\alpha/\tau}$ on the applied field. Figures 2-5 show

such oscillograms for the two samples investigated, whose
characteristics are given. The next section discusses the

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Application of the Magnetostriction Effect to the          SOV/181-1-9-17/31
Investigation of the Surface of Semiconductors

> interpretation of measuring results in detail; the results
> are given in the form of diagrams, and the numerical values
> are given in two tables. The method described is very ex-
> pedient for a quick and fairly accurate determination of the
> field-bound change of s. A. V. Rzhanov, I. A. Arkhipova, and
> V. N. Bidulya (Ref 12) applied this method to investigate the
> modulation of s through an outer electric field. Their re-
> sults, however, did not fit those by the authors in two
> points. This is discussed in the final part of the paper.
> There are 10 figures, 2 tables, and 15 references, 8 of which
> are Soviet.

ASSOCIATION:  Institut poluprovodnikov AN SSSR Leningrad (Institute of
              Semiconductors of the AS USSR, Leningrad)                    //

SUBMITTED:    February 16, 1959

Card 3/3.

AUTHOR: Sorokin, O.V.                          SOV/120-59-2-20/50

TITLE:     An Instrument for Examining Transients on the Surfaces
           of Semiconductors (Ustanovka dlya issledovaniya
           perekhodnykh protsessov na poverkhnosti poluprovodnika)

ABSTRACT: Surface conductivity and surface recombination are
           examined by using the changes in carrier concentration
           produced by an external magnetic field.  The first part
           of the paper (to Eq (7)) deals with the theory.    An
           external electric field is used to perturb the
           equilibrium state of the semiconductor;  this field is
           such as to induce a surface charge density of $1.25 \times 10^{11}$
           electron units per $cm^2$.  The field is varied rapidly
           (at a frequency of 3.5 kc/s) to examine the fast changes,
           and by simple switching to examine the slow changes.
           The current through the specimen is fixed by inserting a
           large series resistance;  the voltage drop across the
           specimen is measured.   A differential amplifier of gain
           about 2000 and of pass band from 10 c/s to 10 kc/s is
           used to eliminate the parasitic signal resulting from

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SOV/120-59-2-20/50

An Instrument for Examining Transients on the Surfaces of
Semiconductors

capacity pick-up (the gain for signals in the same phase
at both inputs is less than 1).   A special cathode
follower with a double $\pi$-type LC filter precedes the
amplifier.   Special precautions are taken to filter the
alternating voltage very thoroughly in order to eliminate
interference from high harmonics, which are very readily
transferred from the high-voltage source producing the
external electric field to the input of the amplifier.
The magnet is used to alter the carrier concentration,
which alters the mean lifetime and hence the concentration,
but does not affect the mobility.   A few results are
given for Ge to illustrate the operations of the
differential amplifier and other units.   (The circuits
are those given by Madelung and Banbury, Refs 14 and 16,
with certain minor improvements, the main one of which
Card 2/3  is an improved device for balancing out the parasitic

An Instrument for Examining Transients on the Surfaces of
Semiconductors

SOV/120-59-2-20/50

Card 3/3

signal to the differential amplifier).
There are 14 figures and 18 references, of which 11 are
Soviet, 5 are German and 2 are English.

ASSOCIATION: Institut poluprovodnikov AN SSSR
(Institute of Semiconductors, Ac.Sc. USSR)

SUBMITTED:    March 3, 1958

Sorokin, O. V.

S/181/60/002/007/023/042
B006/B060

AUTHORS:    Sorokin, O. V., Tuseyev, B. T.

TITLE:    Comparative Study of the Magnetic Concentration Method and the Photoelectric Method of Measuring the Surface Recombination Rate

TEXT:    In continuation of previous papers the authors report here on their measurements of the surface recombination rate by means of two methods that had been already discussed in Refs. 1, 6. $\Delta s$ was measured from the second harmonic with a setup described here, whose block diagram is shown in Fig. 1. The function of the various blocks is discussed and some problems concerning calibration are briefly dealt with. Prior to the measurements proper concerning the modulation of the surface recombination rate by the method of the "traveling light beam", the minority carrier lifetime and the diffusion coefficient were measured among other things. After experiments on modulation, the surface under examination was ground, and the surface recombination rate was again measured by the method of the

Card 1/2

Comparative Study of the Magnetic Concentration       S/181/60/002/007/023/042
Method and the Photoelectric Method of Measuring      B006/B060
the Surface Recombination Rate

"traveling light beam" (Refs. 3, 8). The results were compared. Fig. 2 shows
a comparison of results concerning the variation with time of the surface
recombination rate, obtained by the method of the second harmonic (full
line) and obtained by the method of the "traveling light beam" (dots).
Highly homogeneous single crystals of n-type germanium were used for the
experiments. The initial s-value was $s_0 = 600$ cm/sec. It is established from
the investigations that both methods lead to correct results. There are
2 figures and 13 references: 11 Soviet and 1 German.

ASSOCIATION:    Institut poluprovodnikov AN SSSR Leningrad
                (Institute of Semiconductors of the AS USSR, Leningrad)

SUBMITTED:      December 4, 1959

Card 2/2

25689        3/181/61/003/007/011/023
           B102/B214

24,7700

AUTHORS:    Petrusevich, V. A., Sorokin, O. V., and Kruglov, V., I.

TITLE:      Applicability of the parameter of the "effective surface
            recombination rate" for Ge and Si

PERIODICAL: Fizika tverdogo tela, v. 3, no. 7, 1961, 2023-2030

TEXT:  The object of the authors was to demonstrate experimentally that
cases in which the parameter of the "effective surface recombination rate"
cannot be used for the characterization of the Si surface are realizable
in practice, and that this parameter can be used generally for the
characterization of Ge surfaces treated by the usual etching agents.  The
fact that the application of the effective surface recombination rate
$S_{eff}$ is not always justified has been referred to by Shockley and Read
(Phys. Rev. $\underline{87}$, 835, 1952).  Also the conditions of applicability of this .
parameter were theoretically studied earlier.  The authors of the present
paper investigated n-type and p-type germanium with a conductivity close
to intrinsic conductivity, and also n-type and p-type silicon with
resistivities of 10 to 130 ohm·cm.  After establishing the ohmic contacts
the surfaces of the individual samples were treated differently, i. e.,
Card 1/6

.Applicability of the parameter ...

etched by different agents and under different conditions. The method of measuring the field effect has been described elsewhere by Sorokin (PTE, No. 2, 60, 1959). The change $\Delta\sigma$ of conductivity related to the change of $Y$ was determined from the field effect, and thus $S_{eff}$ was found out.

Indeed, $S_{eff} = \frac{1}{\tau} \int_0^d -Y(x) \, dx$, where $Y(x)$ is the height of the surface potential barrier as a function of the coordinates, and $\tau$ is the volume lifetime of the nonequilibrium carriers. The thickness $d$ of the barrier is defined as the normal distance from the surface where $Y = Y_o$ up to the place where $Y = 1$. The known theoretical relation $\Delta\sigma = f(Y)$ is used for the determination of $Y_o$ (J. R. Schrieffer, Phys. Rev. 97, 641, 1955). The results of the investigations are given in a table. The positive values of $Y_o$ correspond to the blocking and inversion barriers, and the negative values to the anti-blocking barriers. Of particular interest are the results for Si, as only hypothetical data exist on the effects of the above-mentioned etching agents. For example, a strong blocking or even an inversion layer appears on p-type Si after it has been etched according to method 4, while either a weakly blocking or an anti-blocking barrier appears in n-type Si. All Card 2/6

25689
S/181/61/003/007/011/023
B102/B214

experiments were carried out in room atmosphere.  The Table also contains data on the surface recombination rate calculated from the curves of the spectral distribution of photoconductivity.  The following conclusions can be drawn from the results:  1) For sufficiently high surface potential barriers and the usual values of the diffusion length, a case is realizable in practice in which the notion of $S_{eff}$ loses all sense.  The higher the resistance of the sample, the lower is the value of $\gamma_0$ for which this will be the case, because $\mathcal{L}$ increases with $\rho$.  It is, therefore, to be expected that for semiconductors having a forbidden band width larger than that of germanium, the parameter $S_{eff}$ will not be applicable for relatively small $\gamma_0$.  2) All conclusions which are based on the application of $S_{eff}$ or $\tau_{eff}$ should be revised, and it should be investigated whether the criteria for the applicability of $S_{eff}$ are fulfilled.  This holds, above all, for the band structure of surface semiconductors with which $S_{eff}$ or $\tau_{eff}$ is used as a function of $\gamma_0$.  3) It is necessary to improve the theory of

Card 3/6

25689  S/181/61/003/007/011/023

Applicability of the parameter ...   B102/B214

effects in which surface properties are involved, and to determine the role of the geometry of the potential barrier. 4) The criteria for the applicability of $S_{eff}$ should also be improved. Above all, it should be kept in mind that $\tau$ in the surface charge layer is in general not equal to $\tau$ in the volume of the semiconductor. The authors thank G. Ye. Pikus, and G. L. Bir for discussions. There are 4 figures, 1 table and 14 references: 9 Soviet-bloc and 5 non-Soviet-bloc.

ASSOCIATION: Institut poluprovodnikov AN SSSR Leningrad (Institute of Semiconductors, AS USSR, Leningrad)

SUBMITTED: January 14, 1961 (initially) and February 10, 1961 (after revision)

Card 4/6

L 18990-63        EWT(1)/EWP(q)/EWT(m)/BDS    AFFTC/ASD/ESD-3/IJP(C)   GG/JD/JG

ACCESSION NR: AT3002450                S/2935/62/000/000/0164/0174

AUTHOR: Petrusevich, V. A.; Sorokin, O. V.

TITLE: Effective rate of surface recombination and criteria of its applica-
bility [Conference on Surface Properties of Semiconductors, II
Institute of Electrochemistry, AN SSSR, Moscow, 5-6 June, 1961]

SOURCE: Poverkhnostny̆ye svoystva poluprovodnikov. Moscow, Izd-vo AN SSSR,
1962, 164-174

TOPIC TAGS: recombination, surface recombination, semiconductor-surface
recombination

ABSTRACT: Experimental verification of theoretical conclusions arrived at by
G. L. Bir (Physics of solid-state body, 1, 67, 1959) is reported. Criteria of
applicability of the effective rate of surface recombination (ERSR) have been
established; the effect of the geometry of the near-surface space charge upon
the spectral distribution of photoconductivity (SDPC) and photomagnetic effect
(PME) has been clarified. Near-intrinsic-conductivity Ge and 10-130-ohms-cm
Si were used in the experiments. Usual etching methods caused high surface

Card  1/2

L 18990-63

ACCESSION NR: AT3002450

potential barriers in Ge and Si. The diffusion length and coefficient of ambipolar diffusion measured by SDPC and PME methods gave very close results, while ERSR values measured by the same methods differed widely. In some cases, theoretical and experimental SDPC curves did not agree. Hence, ERSR is inapplicable in many important practical cases, such as the treated surface of Si. On the basis of the above facts, more accurate formulas for computing parameters of SDPC and PME have been developed by the authors. "In conclusion, the authors are deeply grateful to G. Ye. Pikus and G. L. Bir for their interest in the work and useful advice." Orig. art. has: 4 figures and 19 formulas.

ASSOCIATION: Institut poluprovodnikov AN SSSR (Institute of Semiconductors, AN SSSR)

SUBMITTED: 00          DATE ACQ: 15May63          ENCL: 00

SUB CODE: PH          NO REF SOV: 008          OTHER: 005

Card  2/2

AUTHORS:        Iorish, A.Ye., Krasin'kova, M.V., Moyzhes, B.Ya.,
                and Sorokin, O.V.

TITLE:          The thermal emf, electric conductance and resistance
                variation in a magnetic field of barium-strontium
                oxide

TEXT:           Although a number of papers have dealt with measure-
ments of thermal emf, $\Delta \rho / \rho$ in a magnetic field, and electrical con-
ductance of cathode oxide coatings, these data have been considered
in isolation.  Here they are all examined together in the light of
the accepted theory that conduction in oxide coatings occurs through
the pores, which are filled with electron gas by thermionic emission
from their walls.  First a theoretical treatment is given for the val-
ues of thermal emf, conductance and $\Delta \rho / \rho$ for the electron gas in
the pores, and then experimental results for barium-strontium oxide

Card 1/2

The thermal emf, ...

S/109/63/008/002/010/028
D413/D308

are presented and discussed. The linear relation of $\Delta\rho/\rho$ to H in weak magnetic fields is explained: the work function relative to the bottom of the conduction zone is evaluated: the dimensions of the pores for maximum conductance are calculated with allowance for the space-charge in the pores. There are 8 figures.

SUBMITTED:        April 26, 1962

Card 2/2

S/0109/64/009/002/0300/0307

ΞΙΟΝ NR: AP4017600

R: Dubova, T. A.; Iorish, A. Ye.; Krasin'kova, M. V.;
es, B. Ya.; Petrov, I. N.; Sorokin, O. V.; Chudnovskiy, F. A.

TITLE: Electrical conductivity and thermo-emf of a barium-strontium oxide in
gnetic field

SOURCE: Radiotekhnika i elektronika, v. 9, no. 2, 1964, 300-307

TOPIC TAGS: electrical conductivity, thermo emf, oxide coated cathode,
strontium oxide, barium strontium oxide thermo emf, barium strontium
ide conductivity

ABSTRACT: Measurements were taken of factory specimens of Ba-Sr oxide,
100-200-microns thick, placed between two cylindrical nickel bases (see
Enclosure 1) and subjected to a transverse magnetic field. One of the tubes was
equipped with a ring anode and served to measure the thermo-emission from the

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ACCESSION NR: AP4017600

... surface of the oxide.  The effect of temperature and the magnetic field on
... resistivity and thermo-emf of the Ba-Sr oxide was investigated.  Estimated
from experimental results, the free-path length of an electron in the cathode
pores is 4-30 microns and the electron mobility is from $3.5 \times 10^4$ to $2 \times 10^5$
$cm^2/v$ sec for the various specimens.  The thermodynamic work function,
electron concentration, and conductivity are also estimated.  It is inferred that
the pores in the oxide cathode must be open and intercommunicating and, there-
fore, that under total thermionic-current conditions, the electrons must be
emitted by the entire near-surface layer of the oxide; this fact may, in part,
explain the abnormally high Schottky effect in oxide cathodes.  Orig. art. has:
7 figures, 13 formulas, and 1 table.

ASSOCIATION: none

SUBMITTED: 30Dec62        DATE ACQ: 18Mar64        ENCL: 01

SUB CODE: GE              NO REF SOV: 001           OTHER: 003

Card  2/3

ACCESSION NR: AP4043679                   S/0109/64/009/008/1447/1457

AUTHOR: Iorish, A. Ye.; Moyzhes, B. Ya.; Sorokin, O. V.;
Chudnovskiy, F. A.

TITLE: Temperature distribution in a cathode oxide coating

SOURCE: Radiotekhnika i elektronika, v. 9, no. 8, 1964, 1447-1457

TOPIC TAGS: oxide cathode, electron tube, electron tube cathode,
$(Ba Sr Ca) CO_3$ cathode, $(Ba Sr) CO_3$ cathode

ABSTRACT: The theoretical and experimental investigation of the temperature
distribution in an oxide-coated cathode is reported. The theoretical part differs
from the well-known work of H. C. Hamaker (Philips Res. Repts., 1947, 2, 55-
67, 103-111, 112-125) in that the temperature drop in the oxide is not assumed
small, and an allowance is made for the Joule heat in the oxide, for the refractive
index of the oxide, and for the radiation reflected by the anode. The experimen-
tal part includes measuring the thermal conductivity $(10^{-5} - 3 \times 10^{-6}$ w/cm-
degree) of oxide-coating grains at temperatures ranging from room temperature

Card 1/2

ACCESSION NR: AP4043679

down to liquid-nitrogen temperature.  It is estimated that the temperature of the oxide may be higher than that of the cathode base by hundreds of degrees when heavy emission currents are involved; a still higher difference is possible under pulsed operating conditions of the tube.  The anode reflection has an essential effect on the temperature distribution.  Hot spots on the cathode due to low thermal conductivity at heavy emission or due to an insufficient rate of heat removal from an underheated cathode may result in sparking; a formula giving a criterion of the cathode thermal instability is offered.  The heat radiation capacity of a Ni-base oxide cathode was measured; the radiation dissipation factor, which corresponds to a photon free-path length of 30—50 microns at 800— 900C, is estimated.  Orig. art. has: 5 figures, 31 formulas, and 2 tables.

ASSOCIATION: none

SUBMITTED: 15Jun63

SUB CODE: EC

NO REF SOV: 005

ENCL: 00

OTHER: 011

Card 2/2

ACCESSION NR:   AP4044875

AUTHOR:  Sorokin, O. V.; Samarin, Yu. P.; Oding, I. A. (Deceased,
Corresponding member AN SSSR)
TITLE:  Design for creep of beams under flexure

SOURCE:  AN SSSR. Doklady* v. 157, no. 6, 1964, 1325-1328

TOPIC TAGS:  creep, beam flexure, beam creep, creep analysis,
bending creep, flexural creep

ABSTRACT:  The creep of a beam under pure flexure is analyzed by
linearizing the set of equations describing a four-element elasto-
viscous model used in investigation of problems associated with
deformation of materials at high temperatures.  It is assumed that
the elastic and viscous characteristics of the model materials are
stress- and time-dependent (obtained by creep testing under constant
stress) and can be represented by piecewise-constant functions.
The initial set of equations is thus converted into a linear one
with discontinuous coefficients.  The procedure of the creep

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ACCESSION NR:  AP4044875

analysis is outlined and illustrated by an example.  A way of
simplifying the method by replacing the variable characteristics of
the model by their averaged quantities is indicated, and the
equation of the curvature of the neutral axis of the beam is given.
The single terms in this equation show the amount of elastic,
elastoplastic, and plastic deformation.  The authors regret that
because of lack of experimental data no conclusion can be made on the
feasibility and applicability limits of this method.  Orig. art. has:
4 figures and 12 formulas.

ASSOCIATION:  none

SUBMITTED:  19Nov63             ATD PRESS:  3090          ENCL:  00

SUB CODE:  AS                   NO REF SOV:  002          OTHER:  000

Card  2/2

SOROKIN, C.V.; LIKHACHEV, Yu.I.

Method for fast loading of specimens in tensile tests.
Zav.lab. 31 no.3:381-382  '65.                    (MIRA 18:12)

1. Kuybyshevskiy politekhnicheskiy institut.

L 14824-65    EWT(m)/EWP(w)/EWA(d)/EWP(t)/EWP(b)    ASD(f)-2/SSD/AFWL/AFTC(p)
JD

AUTHORS:  Sorokin, O. V.; Oding, I. A. (deceased; Corresponding
member AN SSSR)

TITLE:  Concerning creep under pulsating stress

TOPIC TAGS:  creep characteristic, creep mechanism, stress analysis,
strain measurement, rate of deformation

ABSTRACT:  It is shown that the strain-time curve under pulsating
stress can be derived from the creep curve obtained under time-
constant load, by simulating the high temperature deformation pro-
cess by a system consisting of two elastic and two viscous elements,
as shown in Fig. 1 of the enclosure.  A graphic construction for
plotting the strain-time is demonstrated.  This analysis explains
how creep is affected by intermissions during the tests and how seem-

Card   1/3

L 14824-65

ACCESSION NR: AP4048030

ing disparities in the behavior of material under creep at constant stress and under stress relaxation still lead to results that agree with the theoretical calculations. Orig. art. has: 4 figures.

ASSOCIATION: Kuyby*shevskiy politekhnicheskiy institut im. V. V. Kuyby*sheva (Kuyby*shev Polytechnic Institute)

SUBMITTED: 19Nov63                                           ENCL: 01

SUB CODE: AS                    NR REF SOV: 000          OTHER: 000

Card 2/3

L 14824-65

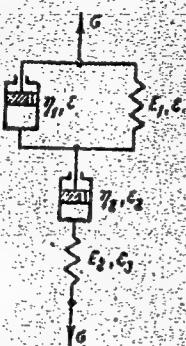Fig. 1. Model of high-temperature deformation of bodies

Card 3/3

SAVOV, N.; SOROKIN, P.; KALUCHEVA, Iv.

Studies of various mycobacteria isolated from animals having
reacted to tuberculin. Izv Vet inst zaraz parazit 8:17-24 '64

IVANOV, Iv.; SOROKIN, P.

Comparative studies on the amino acid composition in Listeria
monocytogenes and Erysipelothrix insidiosa. Izv Vet inst zaraz
parazit 8:41-44   '64

SOROKIN, P.

Biosynthesis of citric acid by means of Aspergillus niger. Doklady
BAN 17 no.6:581-584  '64.

1. Submitted by Corresponding Member D. Mateev.

SOROKIN, P. A.

Sorokin, P. A. — "Change in the cardiovascular system during acute hepatitis," Sbornik trudov (Voyen.-med. akad. im. Kirova), Vol. XLIII, 1949, p. 140-43

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949.)

T

Country      : USSR
Category     : Human and Animal Physiology, Circulation

Abs. Jour.   : Ref Zhur Biol, No. 2, 1959, No. 8060

Author       : Sorokin.P.A.; Mitropol'skiy,A.N.; Gadzhiyev,S.A.;
Instut.      : Blestkina T.G.
Title        : Changes in Certain Indices of the Functional
               State of the Cardiovascular System in Patients
               with Mitral Stenosis After Commisurotomy.

Orig. Pub.   : Terapevt. arkhiv, 1957, 29, No. 8, 3--9.

Abstract     :      The study included 50 patients ranging in
               age from 17 to 43.  Prior to surgery it was
               established that in 41 of the patients mitral
               insufficiency was present as well as stenosis,
               while the other 9 had pure mitral stenosis.  In
               46 patients the stenosis was of grades III and
               IV, and in the other 4 it was of grade II.  The
               status of the circulation was evaluated by means
               of the arterial and venous pressure (the Waldman
               method) and cardiac systolic volume, determined
               by the N.N.Savitskiy mechanocardiograph and
               acetylene method or calculated from Starr's

Card:        Clinic For. Therapy 1/2 Surgical Clinic for Advanced Physicians, Mil-Med Acad im Kirov

Category     : Human and Animal Physiology, Circulation

Abs. Jour.   : Ref Zhur Biol, No. 2, 1959, No. 8060

Author       :

Title        :

Orig Pub.    :

Abstract     : formula.  One to two months after commisurotomy
               grade I mitral stenosis was detected in 5 pa-
               tients, grade II in 31 patients, grade III in 11
               and grade IV in 3.  Six months to $2\frac{1}{2}$ years
               following the operation signs  of grade I mitral
               stenosis were found in 3 out of the 25 patients
               followed, grade II in 17, grade III in 3 and
               grade IV in 2.  The absence of improvement in
               cardiovascular function in 5 patients the author
               explains by postoperative complications and
               inadequate dilatation of the mitral orifice.--
               T.S.Vinogradova
Card:        2/2

L 42191-65   EWG(j)/EWG(r)/EWT(1)/FS(v)-3/EWG(v)/EWG(a)-2/EWG(c)   Pb-4/
Pe-5   AFFTC/AFMDC/AMD/APGC   DD
ACCESSION NR:  AT5010604                    UR/3147/64/003/000/0091/0105

AUTHOR:  Gramenitskiy, P. M.; Sorokin, P. A.

TITLE:  Mechanism of changes in respiration and circulation in dogs exposed to
oxygen under high pressure

SOURCE:  AN SSSR.  Institut evolyutsionnoy fiziologii.  Funktsii organizma v
usloviyakh izmenennoy gazovoy sredy, v. 3, 1964, 91-105

TOPIC TAGS:  oxygen poisoning, high pressure respiration, circulation pressure
chamber, oxygen

ABSTRACT:  The authors studied 17 dogs weighing 12—17 kg under urethane anesthe-
sia, administered in a 2/3 dose before and a 1/3 dose after fixation on a
table.  The average dose of administered urethane was 1.2 g/kg.  In cases
where respiration was accelerated, morphine was administered.  Heparin
was also given to prevent coagulation in the blood-pressure monitoring
device.  After anesthesia, tracheotomy was performed and a canule was
introduced into the femoral artery to measure arterial pressure.  The
prepared animals were placed in a pressure chamber containing a kymo-
graph for recording respiration, lung ventilation, and blood pressure.

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L 42191-65
ACCESSION NR:  AT5010604

EKG's were also recorded at various intervals throughout the experiments.
The pressure in the chamber was maintained at 6 atm (except for the 3 con-
trol tests), and the dogs breathed nearly pure oxygen (nitrogen content,
1—2%).  Exposure conditions varied according to the purpose of the tests.

A total of 26 tests were conducted.  In 7 tests, animals with intact
nervous systems were exposed to high oxygen pressures.  In 11 tests,
animals underwent vagotomy, resection of the subclavian loop, or complete
cardiac denervation prior to the action of oxygen or at various periods dur-
ing oxygen poisoning.  In 8 tests, the splanchnic nerves were resected and
the adrenal glands were ligatured.  In all tests, the animals were observed
for initial symptoms of oxygen poisoning.

The experiments revealed that the course of oxygen poisoning in
anesthetized dogs could be divided into 4 periods.  The first period was
characterized by decreases in lung ventilation and cardiac activity and was
adaptive in nature.  The vagus nerve played the basic role in these protec-
tive reactions.  The second, preconvulsive period was characterized by
hyperventilation, tachycardia, and increased arterial pressure which re-

Card  2/4

L 42191-65

ACCESSION NR: AT5010604

flected the participation of the adrenosympathetic system. These reactions were deleterious, since they accelerated the onset of oxygen poisoning. In the third period, convulsions took place. This period was characterized by a gradual decrease in cardiac rhythm which became tachycardia as soon as convulsions occurred. At the end of this period there was a parasympathetic effect with a background of respiratory inhibition which led to bradycardia, nodal rhythm, or cardiac block. These disruptions of cardiac rhythm were reversible and could be eliminated by vagotomy. The fourth period was characterized by a sharp increase in blood pressure and accelerated cardiac activity (sinus tachycardia). When respiration had ceased, arterial pressure fell but cardiac activity persisted. At the end of this period bradycardia and cardiac block occurred which could not be eliminated by vagotomy. It was found that preliminary resection of vagus nerves eliminated the decrease in cardiac activity during the first three periods of oxygen poisoning and therefore hastened the onset of convulsions and shortened the survival period of the animals. Preliminary ligature of the adrenals increased the survival time of dogs exposed to 6 atm oxygen and inhibited the development of convulsions. A similar but more pronounced effect was produced when splanchnic nerves were also eliminated. This effect can be explained

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L 42191-65

ACCESSION NR: AT5010604

as a function of the removal of the adrenosympathetic system and the consequent increased blood deposition and, in connection with this factor, decreased blood supply to tissues as well as lowered oxidation processes. Following adrenal isolation and disruption of splanchnic and cardiac sympathetic nerves, those protective parasympathetic reactions noted in the cardiac activity of intact animals did not occur, in spite of the preservation of vagus nerves.

The authors conclude by commenting on the role of the adrenosympathetic system in reactions to high oxygen pressures. On one hand the system must play a significant role in toxic manifestations of high-pressure oxygen by inhibiting parasympathetic cardiovascular protective reactions. On the other hand, the system must participate in the development of these very protective reactions. Orig. art. has 6 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00                ENCL: 00            SUB CODE: LS, PH

NO REF SOV: 011         OTHER: 009         ATD PRESS: 3240-F

Card 4/4

L 42001-65   EWG(j)/EWG(r)/EWT(1)/FS(v)-3/EWG(v)/EWG(a)-2/EWG(a)   Pe-5   DD

UR/3147/64/003/000/0106/0115

ACCESSION NR: AT5010605

AUTHOR: Groshikov, M. A.; Sorokin, P. A.

TITLE: Pathomorphological changes in the lungs of animals exposed to high oxygen pressure

SOURCE: AN SSSR. Institut evolyutsionnoy fiziologii. Funktsii organizma v usloviyakh izmenennoy gazovoy sredy, v. 3, 1964, 106-115

TOPIC TAGS: oxygen pressure, lung, oxygen effect, hemorrhage

ABSTRACT: The changes caused by high oxygen pressure in dogs and guinea pigs are essentially the same. Expansion and hyperemia of the veins and capillaries, sometimes with hemorrhages in the surrounding tissues and in the lumens of the alveoli are observed in the lungs as well as perivascular edema, thickening of the interalveolar walls due to edema and dilatation of the capillaries, and varying degrees of atelectasis. Lung injury was combined with more or less pronounced congestion in the other viscera. Adrenalectomy in the dogs, especially when combined with division of the splanchnic nerves, reduced the pathological effects of high oxygen pressure on the lungs. This confirms the importance of humoral factors in pulmonary lesions resulting from acute oxygen poisoning. Division of the splanchnic

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L 42001-65

ACCESSION NR: AT5010605

nerves causes hyperemia in the viscera. Congestion and pulmonary edema are relieved by reducing the amount of circulating blood. This explains why the combination of adrenalectomy and splanchnicectomy alleviates the adverse pulmonary effects of high oxygen pressure. Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 00                    ENCL: 00                    SUB CODE: LS

NO REF SOV: 007                  OTHER: 012

Card 2/2

L 42190-65    EWG(j)/EWG(r)/EWT(l)/FS(v)-3/EWG(v)/EWG(a)-2/EWG(c)    Pb-/
Pe-5    AFFTC/AFMDC/AMD/APGC    DD

ACCESSION NR: AT5010606                    UR/3147/64/003/000/0116/0125

AUTHOR: Sorokin, P. A.

TITLE: Changes in cardiac electrical activity in animals exposed to high oxygen pressures

SOURCE: AN SSSR. Institut evolyutsionnoy fiziologii. Funktsii organizma v usloviyakh izmenennoy gazovoy sredy, v. 3, 1964, 116-125

TOPIC TAGS: high pressure respiration, oxygen, pressure chamber, oxygen poisoning, cardiovascular system, bioelectricity, EKG

ABSTRACT: The authors studied the effects of oxygen poisoning on the heart bio-electricity of guinea pigs and dogs. The first series of experiments was conducted on intact guinea pigs placed on their backs and held rigidly in place by their hind quarters. Needle electrodes were fixed subcutaneously for the EKG pickup. The animals were situated in a 65-liter chamber in which the electrodes were connected to EKG leads. The first group of tests took place under pressures of 1.0, 2.0, and 3.0 atm for 150—180 min (27 experiments). EKG's were registered before, during, and after pres-

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L 42190-65

ACCESSION NR: AT5010606

sure tests. In addition, heart bioelectricity was studied during convulsive forms of severe oxygen poisoning under pressures of 5.5 atm (16 experiments). In 8 experiments with guinea pigs at 5.5 atm, a 1-mg/kg solution of atropine was injected subcutaneously. In all tests, oxygen content ranged from 92 to 96% and carbon dioxide content from 0.05 to 0.2%.

The second series of experiments was conducted on dogs anesthetized with urethane. Of 15 experiments, 6 were on intact animals, 7 were on dogs vagotomized prior to the action of oxygen, and 2 were on dogs which underwent cardiac denervation during severe, convulsive oxygen poisoning. All tests took place in a large pressure chamber in which animals were exposed to 6 atm. Nitrogen content did not exceed 2%. EKG's were recorded before, during, and after the tests.

The results of the experiment revealed that in the initial period of acute oxygen poisoning there was a sharp decrease in sinusoidal rhythm, often extrasystole, and also sinoauricular block and disruption of atrio-ventricular conductivity in intact guinea pigs. Cardiac block and, less often, nodal or idioventricular rhythm was observed during the convulsive

Card  2/4

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ACCESSION NR: AT5010606

period of oxygen poisoning. During the terminal period, sinusoidal tachy-cardia was observed in dogs which changed to bradycardia and transverse block when breathing had stopped. Preliminary atropine injections or re-section of vagus nerves eliminated decreased cardiac rhythm, sinoauricular block, and disruption of atrioventricular conductivity, both in the initial and convulsive periods of acute oxygen poisoning, but did not prevent brady-cardia or cardiac block in the terminal period. Sinusoidal tachycardia at the beginning of the terminal period followed heart block or heterotropic rhythm and was not eliminated by resecting sympathetic nerves leading to the heart. Displacement of the R(S)-T segment with negative "gigantic" T-waves during the simultaneous decrease in voltage of R spikes was con-sidered as a manifestation of myocardial hypoxia which evidently developed as a result of tissue respiration inhibition during acute oxygen poisoning. The disruption of cardiac rhythm and other bioelectrical shifts which occurred during the convulsive period of acute oxygen poisoning were temporary in nature and quickly disappeared when high oxygen pressures were terminated.

Orig. art. has 5 figures.

Card    3/4

L 42189-65   EWG(a)-2/EWG(c)/EWG(j)/EWG(r)/EWG(v)/EWT(1)/FS(v)-3   Fb-4/
Pe-5   AFFTC/AFMDC/AMD/APGC   DD

ACCESSION NR: AT5010607                    UR/5147/64/003/000/0126/0131   42
                                                                          B+1

AUTHOR: Sorokin, P. A.

TITLE: Change in the amount of circulating blood in dogs breathing oxygen
under pressures of 1.0 and 2.0 atm

SOURCE: AN SSSR. Institut evolyutsionnoy fiziologii. Funktsii organizma v
usloviyakh izmenennoy gazovoy sredy, v. 3, 1964, 126-131

TOPIC TAGS: respiration, oxygen, dog, pressure chamber, high pressure respiration,
circulation

ABSTRACT: The authors studied quantitative changes in blood circulation of dogs
breathing pure oxygen at pressures of 1.0 and 2.0 atm.  All experiments
were performed in a pressure chamber.  The dogs breathed both normal
air and oxygen through masks while lying on their left sides.  The amount
of time between experiments for each dog ranged from 1 to 2 weeks so
that conditioned reflexes to the respiratory mask would not develop.  On
the day of a typical test, dogs were weighed, placed in the pressure cham-
ber with masks on, and given first normal air to breath and then oxygen

Card 1/3

L 42189-65
ACCESSION NR: AT5010607

at 1.0 and 2.0 atm.    After 3 to 4.5 hr, quantitative analysis of blood cir-
culation took place.    Blood flow was monitored by the Gregersen method
(1944) using Evans blue.

In 20 control experiments where animals breathed normal air, the
flow of plasma was 42.2—53.0 ml/kg (mean flow, 47.3 ml/kg).   The vol-
ume of blood circulation was 84.4 ml/kg (76.0—93.0 ml/kg).   When
animals breathed oxygen at normal pressure, the amount of circulating
plasma was 41.8 ml/kg (39.1—44.0 ml/kg), which represented a 12% de-
crease from the control level.    Blood circulation was 75.6 ml/kg
(66.2—83.8 ml/kg).    In 10 of 13 experiments at 2.0 atm, plasma circu-
lation decreased by 11.6%; blood circulation decreased by 9.4% in 9 ex-
periments.    Thus the hemodynamics of animals breathing 2.0-atm oxygen
was essentially the same as for those breathing 1.0-atm oxygen.

It was concluded that the quantity of circulating blood was often sharply
decreased in animals breathing oxygen under 1.0 and 2.0 atm of pressure.
This decrease was considered as an adaptive reaction of the organism to
the increased partial pressure of oxygen in respired air.

Card 2/3

L 42189-65
ACCESSION NR: AT5010607

Orig. art. has 3 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 00                    ENCL: 00                    SUB CODE: LS, PH

NO REF SOV: 003                  OTHER: 009                 ATD PRESS: 3240-F

Card 3/3

SOROKIN, P.G.

@ elec

Electrical Engineering Abstracts
May 1954
Switchgear

1954. On the extinction of arcs in apparatus for the switching of high-power e.h.v. direct-current networks. G. A. KUKEKOV AND P. G. SOROKIN. *Elektrichestvo*, 1953, No. 10, 20-4. *In Russian.*
Description of experimental work on conventional compressed-air circuit breakers, assisted by an oscillatory circuit shunting the arc. The main d.c. was simulated by 50 c/s currents of up to 125 A at 50 kV. The capacitor of the oscillatory circuit was initially charged to about 10 kV, freely oscillating at 300–1000 c/s, with a current amplitude of about double the main current. Oscillograms are given of the extinguishing action without and with the oscillatory circuit, and it is concluded that the method is applicable to 400 to 800 kV d.c. power switching.
— F. QUELON

Leningrad Polytech Inst to im. Kilinin (for Kukekov)

Sci. Res. Inst. of Direct Currents (for Sorokin)

SOV/105-59-3-5/27

8(3)
AUTHORS:    Kukekov, G. A., Candidate of Technical Sciences, Docent,
            Sorokin, P. G., Engineer, Shipulina, N. A., Candidate of Technical
            Sciences (Leningrad)

TITLE:      Switch-off Contactors for High-tension Direct Current Transmission
            Lines (Otklyuchayushcheye ustroystvo dlya liniy postoyannogo toka
            vysokogo napryazheniya)

PERIODICAL: Elektrichestvo, 1959, Nr 3, pp 24-27 (USSR)

ABSTRACT:   The use and the further development of d.c. long-distance trans-
            mission lines in many respects depends upon the creation of new
            electrical equipment and installations. Such devices include con-
            tactors designed to disconnect powerful and highly inductive high-
            tension d. c. circuits. The principal difficulty encountered in
            this problem consists of the fact that it is much more difficult
            to suppress the flashover arc in d. c. circuits than in a. c. cir-
            cuits. In the course of the investigations carried out in the
            Leningradskiy politekhnicheskiy institut im. Kalinina (Leningrad
            Polytechnical Institute imeni Kalinin) and at the Institut postoyan-
            nogo toka (Institute of Direct Current) (Refs 1,2) it was found that
            if the d. c. arc is shunted by an oscillation circuit with cor-
Card 1/3    responding parameters and initial conditions - the current in the

Switch-off Contactors for High-tension Direct Current Transmission Lines

arc changes its direction and hence that it may pass through zero.
As was shown by experiments, this provides a means of extinguishing
the arc in arc-suppression devices of high-tension alternating
current contactors, even if the frequency of the oscillations is
somewhat higher (500 - 1000 cycles). In this paper a short analysis
of the performance of contactors designed on this principle and a
description of the experiments carried out with these contactors is
given. This model contactor was tested at the rectifier sub-station
of the experimental d.c. transmission line from the Kashira water
power station to Moscow. Three test series were carried out.
Summary: 1) If a high-tension a.c. arc-suppression device is combined
with an oscillation circuit,which shunts the arc generated in the
arc-suppression device when the contactor disconnects the line, it
is possible to create a device which is able to disconnect high-
tension d.c. transmission lines. 2) If the oscillation circuit is
designed correspondingly to the arc characteristic,no previous
charging of the oscillation circuit capacity is required. 3) At
present air contactors are considered to be the most convenient
type, because the contacts remain open after disconnecting. The
rest charge on the condenser must be destroyed by a special device

Card 2/3        which is built-in in the contactor.-There are 6 figures and 5 Soviet

SOROKIN, F. I.

Metal Cutting

Machining of dovetain profiles.  Stan. i instr., 23, No. 6, 1952.

SOROKIN, P.I., inzh.

Design of thin-walled elastic rods having open profiles and
continuously varying cross sections along the rod. Trudy Kiev.
avt.-dor. inst. no.3:104-116 '57.                    (MIRA 11:5)
                            (Elastic rods and wires)

"On Certain Correlations Between the Geometrical Dimensions
of Frame Sections Made of Thin Tubing," by P. I. Sorokin,
Krivay Rog Ore Mining Institute, Prikladna Mekhanika, Vol 3,
No 2, 1957, pp 179-185

This article considers a symmetrical frame made of channel sections
of thin tubing and subjected to antisymmetrical twisting forces. An equation
is given which expresses the relationships of certain geometrical di-
mensions of a frame made up of three joined channel sections, two of which
are in the same line, with the third perpendicular to the other two, when
the normal torsional-bending stresses are equal at the ends of the tubes.

The equation is solved for the case when the ratio of the height of
the channel wall to the flange is greater than or equal to unity and smaller
than or equal to four.  The flange width is computed for a section of the
side frame of the ZIL-50 automobile, and the value obtained was  smaller
than the width of the flange of the present design.

The formulas given in the article are recommended for use in designing
automobile frames and other thin-walled frame structures.  (U)

Sum, rt 1967

SOROKIN, P.I., inzh.

Calculation of the stability of automobile frames under the action of a symmetrical load and in braking the automobile. Sbor. nauch. trud. KGRI   no.7:273-287  '59.          (MIRA 16:9)
(Automobiles—Frames)

SOROKIN, P. I., Cand Tech Sci -- (diss) "Application of the theory of
V. Z. Vlasov to the calculation of automobile chassis." Kiev, 1960.
15 pp; (Academy of Sciences Ukrainian SSR, Inst of Mechanics); 250 cop-
ies; price not given; (KL, 22-60, 139)

SOROKIN, P.I.; POZDNYSHEV, V.M.; POPOV, V.F.; BALINSKIY, V.R.; LESNIKOVICH, S.S.

Casting magnesium iron crankshafts. Lit. proizv. no.5:8-9 My '62.
(MIRA 16:3)

(Cranks and crankshafts)          (Iron founding)

FOMINYKH, I.P.; NOVIKOV, P.T.; SOROKIN, P.I.

Using the primary heat of castings to hasten their annealing.
Lit. proizv. no.4:28-29 Ap '64.                          (MIRA 18:7)

BORODIN, N.I. inzhener.

Using machinery with attachments. Mekh. stroi. 14 no.4:24 Ap '57.
(Earthmoving machinery)                    (MIRA 10:6)

SOROKIN, P.I.

Calculation methods in zonal over-all mechanization of the
construction of excavated canals by using bulldozers and ex-
cavators. Trudy Inst.vod.khoz.i energ. AN Kir.SSR  no.5:
49-86  '59.                                    (MIRA 13:5)
                (Excavating machinery)
          (Irrigation canals and flumes)

SOROKIN, P. I., Cand Tech Sci (diss) -- "A method of computing the flow organi-
zation of work of zonal complexes of machinery in building canals". Frunze,
1960. 27 pp (Min Agric USSR, Tashkent Inst of Engineers of Irrigation and
Mech of Agric TIIIMSKh), 250 copies (KL, No 14, 1960, 134)

SOROKIN, P.I.; KIRPICHENKO, M.M., red.; BEYSHENOV, A., tekhn. red.

[Over-all mechanization of earthwork operations in construction]
Kompleksnaia mekhanizatsiia zemlianykh rabot v stroitel'stve.
Frunze, Kirgizskoe gos.izd-vo, 1960.  58 p.          (MIRA 14:6)
          (Earthwork--Technological innovations)

SOROKIN, Pavel Il'ich, kand. tekhn. nauk; GANYUSHIN, A.I., red.;
GORYACHKINA, R.A., tekhn. red.

[Manual for a bulldozer operator] Posobie mashinistu bul'do-
zera. Moskva, Avtotransizdat, 1962. 128 p.    (MIRA 15:11)
(Bulldozers)

SOROKIN, P.I., kand.tekhn.nauk

Designing a flow with over-all mechanization in erection of an earth
roadbed.  Avt. dor. 26 no.2:24-26 F '63.                (MIRA 16:4)
                              (Road construction)

SOROKIN, P.I.; FOMINYKH, I.P.; BESPALOV, Ya.G.; POBEREZKIN, A.Z.; ZINCHENKO, A.M.; OSKOLKOV, Ye.A.

Inoculation of cupola cast iron with rare-earth metal alloys.
Lit. proizv. no.9:27-31 S '64.                    (MIRA 18:10)

SOROKIN, P.M. (Moscow)

Experience in teaching the topic "Percentage." Mat. v shkole
no. 4:49-50 Jl-Ag '58.                                    (MIRA 11:7)
            (Percentage--Study and teaching)

11/(4)(2)                                        SOV/92-58-9-21/36

AUTHOR:        Sorokin, P.M., Engineer

TITLE:         Revision of the Flow Scheme of the Gas Fractionating
               Unit at the Catalytic Cracking Plant (Izmeneniye skhemy
               gazofraktsioniruyushchey ustanovki kataliticheskogo
               krekinga)

PERIODICAL:    Neftyanik, 1958, Nr 9, p 22 (USSR)

ABSTRACT:      In view of the fact that the catalytic cracking unit
       of the Omsk refinery is presently being used for processing
       heavy crudes, its gas fractionating equipment receives a larger
       quantity of gas. Therefore, it has been found necessary to
       revise the flow scheme of gas fractionators as follows: the gas
       under pressure of 13-14 atm proceeds from the reflux tanks of
       the stabiliser and isopropane tower directly to gasoline mix-
       ing chamber (operating under 10 atm pressure) thus bypassing the
       absorber to which it would have come according to the original
       flow scheme. As a result of this measure, the load of absorbers
       of the gas fractionating unit decreased, and the consumption of
       steam, water, electric power and of gas used by gas motors dropped.
ASSOCIATION: Omskiy NPZ (The Omsk Refinery)
Card 1/1

11(0)                                        SOV/92-58-10-18/30
AUTHOR:  Sorokin, P.M., Engineer

TITLE:  Alkylation Unit is Saving Steam (Ekonomiya para na
  alkiliruyushchey ustanovke)

PERIODICAL:  Neftyanik, 1958, Nr 10, p 25 (USSR)

ABSTRACT:  One of the processing units of the Omsk refinery is using
  30 atm steam to preheat its feed.  This condensed steam having
  approximately 194° C is brought afterwards to the condensation
  unit where it boils up for the second time due to the drop in
  pressure.  In this way it becomes possible to obtain from the
  30 atm condensed steam an additional quantity of exhaust steam.
  It is brought from the reboiler through the separator to the
  exhaust steam line and is used for technical purposes.

ASSOCIATION:  Omskiy NPZ (The Omsk Refinery)

Card 1/1

SOROKIN, P. P.
SURNAME (in caps); Given Names

Country: Bulgaria

Academic Degrees: not indicated

Affiliation: not indicated

Source: Sofia, Priroda, No 1, Jan/Feb 61, pp 80-81

Data: "The Analysis of Luminescence in Microbiology."

SOROKIN, P.P.

Amino acid composition of gram-positive and gram-negative bacteria.
Ukr. biokhim. zhur. 37 no.2:239-242 '65.

(MIRA 18:6)

1. 'e;erinarnyy institut zaraznykh i parazitarnykh bolezney
Bolgarskoy Akademii sel'skokhozyaystvennykh nauk, Sofiya.

SOROKIN P. P.

Oboridovanie vremennykh peregruzochcykh punktov na morskom poberezh'e. /Equipment of tempory trans-shipping points on the sea coast/. /Astrakhan'/Morskoi transport, 1942. 0 p. diagrs (Osnovy voenno-morskogo dla ).

DLC: TC373.S6

PRUDENTOV, Aleksandr Ivanovich; SOROKIN, P.P., kand.tekhn.nauk, nauchnyy
red.; NECHAYEV, G.A., red.izd-va; PUL'KINA, Ye.A., tekhn.red.

[Reinforced concrete tubular sectional piles] Zhelezobetonnye
polye sbornye svai. Leningrad, Gos.izd-vo lit-ry po stroit.,
arkhit. i stroit.materialam, 1959.  109 p.          (MIRA 12:10)
                    (Piling (Civil engineering))

GODES, E.G., inzh.; SHASHKOV, S.A., kand. tekhn. nauk; BAUM, V.A., inzh.;
SOROKIN, P.P., kand. tekhn. nauk, retsenzent; LISITSYN, B.V.,
inzh., retsenzent; BESPALOV, I.V., inzh., nauchnyy red.; PENOVA,
Ye.M., red. izd-va; VORONETSKAYA, L.V., tekhn. red.

[Reinforcing river banks near factory grounds]Ukreplenie beregov
rek na zavodskikh territoriiakh; proizvodstvennyi opyt. Lenin-
grad, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam,
1961. 134 p.                                          (MIRA 14:10)
                    (Hydraulic engineering)

SOROKIN, P.P., kand. tekhn. nauk; TSUKERMAN, N.Ya., inzh. Prinimal
    uchastiye PRUDENTOV, A.I., inzh.; KARPOV, V.V., kand. tekhn.
    nauk, nauchnyy red.; ZHURAVSKIY, N.A., red. izd-va;
    PUL'KINA, Ye.A., tekhn. red.

[Piling] Svainye raboty. Leningrad, Gos. izd-vo lit-ry po
stroit., arkhit. i stroit. materialam, 1961. 213 p.
                                (MIRA 15:3)

        (Filing (Civil engineering))

SOROKIN , P.P., kand. tekhn. nauk, nauchn. red.

[Designing and operating plants with straight-flow hydraulic
classifiers; for fractionation of sand and gravel mixes]
Proektirovanie i ekspluatatsiia ustanovok s priamotochnymi
gidroklassifikatorami; dlia fraktsionirovaniia peschano-
graviinykh smesei. Leningrad, 1962. 151 p.
                                    (MIRA 17:4)
1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidro-
tekhnicheskikh i sanitarno-tekhnicheskikh rabot.

GARMASH, V.M.; SOROKIN, P.S.

Testing the SGL photographic deflection measuring device in crooked boreholes.  Razved. i okh. nedr 27 no.4:47-49 Ap '61.
(MIRA 14:5)

1. Lebedinskiy rudnik.
(Lebedi region (Kursk Magnetic Anomaly)—Mine drainage)

SOROKIN, P.V.

24962  Sorokin, P. V.  Vnutri Khozraschet Ha Kamskom Kabinate.  Bumazh Prom-st'
       1949, No 3  s26-30

So:  Letopis'  No 33, 1949

SOROKIN, P.V.

The Kama Paper Industry Combine in the fifth and sixth five-year
plans.  Bum.prom. 31 no.1:25-26 Ja '56.          (MLRA 9:5)

1. Nachal'nik planovo-ekonomicheskogo otdela Kamskogo tsellyulovno-
-bumazhnogo kombinata.
                    (Kama Valley--Paper industry)

KAMENSKIY, A.V., red.; SOROKIN, P.V., red.; CHEREPANOV, V.A.,
        red.; VERSHININ, T.I., red.izd-va; PASTUKHOV, M.A.,
        tekhn. red.

[Twenty-fifth anniversary of the Kama Woodpulp and Paper
Combine] Kamskii tsselliulozno-bumazhnyi kombinat; 25 let.
Perm', Permskoe knizhnoe izd-vo, 1962.  119 p.
                                        (MIRA 16:4)
                (Krasnokamsk—Woodpulp industry)

SOROKIN, P.V.

Following the road toward the increase of labor productivity.
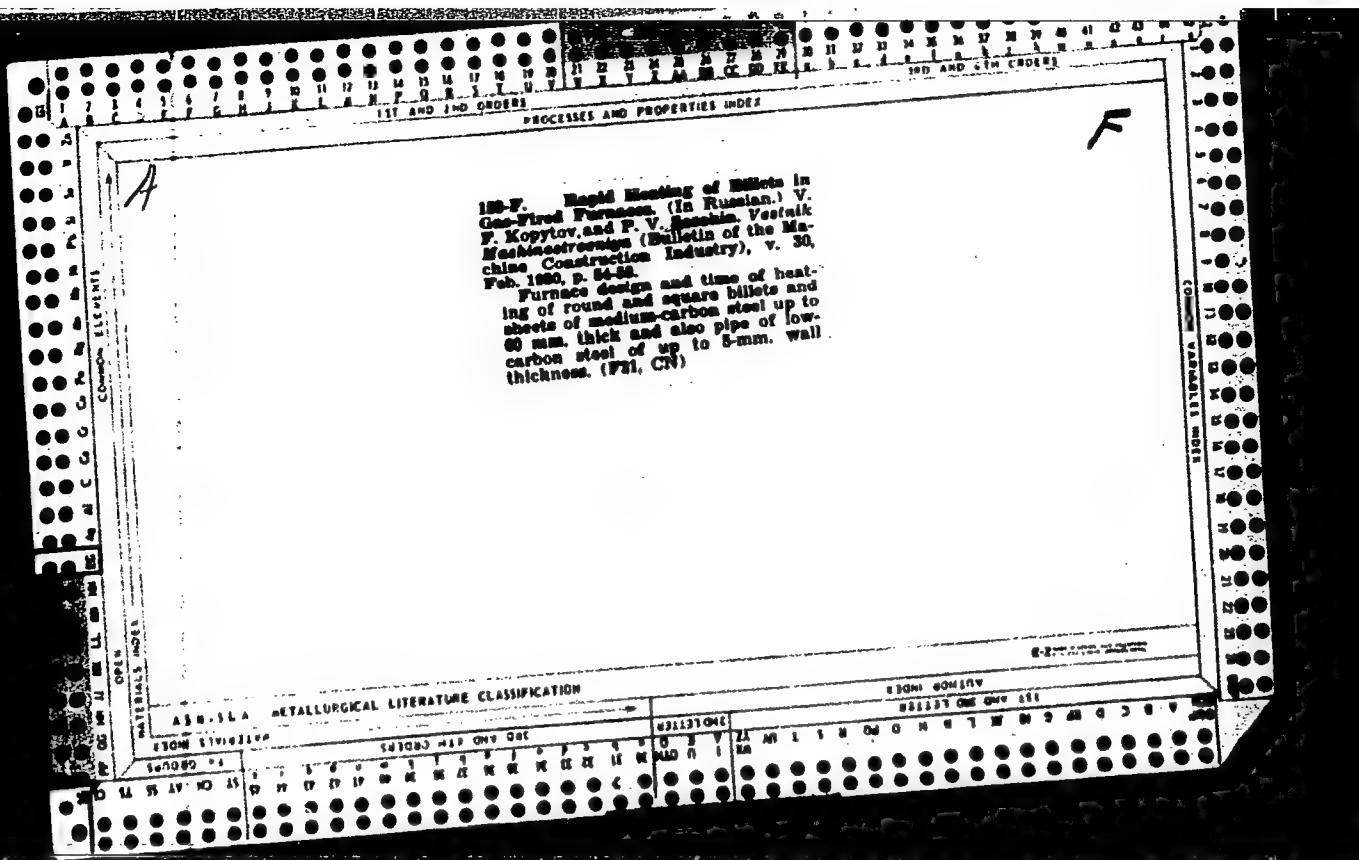Bum. prom. [38] no.6:19-20  Je '63.          (MIRA 16:7)

1. Zamestitel' direktora po ekonomike Kamskogo tsellyulozno-
bumazhnogo kombinata.
          (Woodpulp industry—Labor productivity)

SOROKIN, P. V.

Dopuski na razmery stal'nogo fasonnogo lit'ia. (Vestn. Mash., 1949, no. 7)

(Tolerances for dimensions of profile steel castings.)

DLC: TN4,V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union,
Library of Congress, 1953.

PROCESSES AND PROPERTIES INDEX

METALLURGICAL LITERATURE CLASSIFICATION

123-F. Rapid Heating of Billets in Gas-Fired Furnaces. (In Russian.) V. F. Kopytov and P. V. Semkin. Vestnik Mashinostroeniya (Bulletin of the Machine Construction Industry), v. 30, Feb. 1950, p. 54-58.

Furnace design and time of heating of round and square billets and sheets of medium-carbon steel up to 60 mm. thick and also pipe of low-carbon steel of up to 5-mm. wall thickness. (F21, CN)

SOROKIN, P. V.

Nekotorye osobennosti kontrolia razmerov litykh detalei individual'nogo i
melkoseriinogo proizvodstva.  (Vestn. Mash., 1951, no. 1, p. 77-80)

Includes bibliography.

(Certain features of dimension control of cast machine parts in individual
and small quantity production.)

DLC:  TN4.V4

SO:  Manufacturing and Mechanical Engineering in the Soviet Union,
     Library of Congress, 1953.

KOPYTOV, V.F., kandidat tekhnicheskikh nauk; SOROKIN, P.V.; POPOVA, S.M.,
    tekhnicheskiy redaktor.

[Rapid heating of steel] Skorostnoi nagrev stali. Moskva, Gos.
nauchno-tekhn.izd-vo mashinostroitel'noi lit-ry, 1952. 21 p.
(Nauchno-tekhnicheskaia informatsiia) [Microfilm] (MIRA 9:4)
                    (Steel--Heat treatment)

NEKHENDZI, Yu.A.; SOROKIN, P.V.

Effect of the temperature rarefaction and of a mold upon steel
liquidity. Lit.proizv. no.8:17-20 N '54.          (MLRA 8:1)
      (Founding)

SOROKIN, P. V.

USSR/Miscellaneous-----machine construction

Card 1/1

Authors      :  Kopytov, V. F., Cand. in Tech. Sci.; Kopitova, G. F., engineer;
                and Sorokin, P. V.

Title        :  Decarbonizing steel in reverbatory furnaces

Periodical   :  Vest. mash. 34/3, 36-40, Mar/1954

Abstract     :  The products of burning fuel in a reverbatory furnace at high
                temperature oxidize steel, producing scales on it, and such oxida-
                tion causes oxidation of the carbon in the surface layer of the
                steel. When the decarbonizing of the surface layer is rapid the
                decarbonized layer is found under the scale after heating. In
                order to reduce decarbonization it is necessary during hot pro-
                cessing to heat the steel more rapidly. One Russian reference,
                dated 1949. Graphs.

Institution :  ........

Submitted   :  .........

SOROKIN,P.V.

Largest Russian casting; 80 years of using a cast anvil block
weighing 620 tons.  Lit.proizv. no.9:25-27 S'55.  (MLRA 8:12)
                    (Perm--Iron founding)

SOROKIN, P. V.

4897* High-Strength Pattern Compositions for Precision Casting. Model'nye sostavy povyshennoi prochnosti dlia tochnogo lit'ia. (Russian.) P. V. Sorokin and E. K. Alekseevskaia. Liteinoe proizvodstvo, 1955, no. 12, Dec., p. 2-4.

Polyethylene and its properties. Use and evaluation of paraffin or ceresin wax and their blends or fusions with polyethylene. Graphs, tables. 6 ref.

SOROKIN, P. V., Cand. Tech. Sci.; ALEKSEYEVSKAYA, Ye. K. (Eng.);

"The Use of Shell Molds and Fused Quartz in the Production of Investment Castings," Metody polucheniya otlivok pobyshennoy tochnosti (Methods of Making High-Precision Castings), Moscow, Mashgiz, 1958. 140 p.

PURPOSE: This book is intended for engineers and technicians at plants and institutes as well as in research and planning organizations in all branches of the machine-building industry.